

WHAT IS CLAIMED IS:

1. An expandable and collapsible scissor assembly for an expandable and collapsible structure, comprising:

a first strut having a first end and a second end;

a second strut upper portion having a first end and a second end, the first end of the second strut upper portion being pivotably connected to the first strut at an upper strut connection point; and

a second strut lower portion having a first end and a second end, the second end of the second strut lower portion being pivotably connected to the first strut at a lower strut connection point,

wherein the lower strut connection point is between the upper strut connection point and the first end of the first strut and the scissor assembly is movable between a folded position in which the first end of the first strut and the second end of the second strut upper portion are substantially adjacent and the second end of the first strut and the first end of the second strut lower portion are substantially adjacent, and an expanded position.

2. The expandable and collapsible scissor assembly as set forth in claim 1, wherein, when the scissor assembly is in the expanded position, the first end of the first strut and the first end of the second strut lower portion are disposed proximate each other and the second end of the first strut and the second end of the second strut upper portion are disposed proximate each other.

3. The expandable and collapsible scissor assembly as set forth in claim 2, further comprising a lock for locking at least one of the first end of the first strut and the first end of the second strut lower portion and the second end of the first strut and the second end of the second strut upper portion proximate each other when the scissor assembly is in the expanded position.

4. The expandable and collapsible scissor assembly as set forth in claim 3, wherein the lock includes an upper hub and a lower hub pivotably connected to the at least one of the first end of the first strut and the first end of the second strut lower portion and the second end of the first strut and the second end of the second strut upper portion.

5. The expandable and collapsible scissor assembly as set forth in claim 4, wherein the upper hub and the lower hub including mating members for securing the upper hub and the lower hub proximate each other.

6. The expandable and collapsible scissor assembly as set forth in claim 3, wherein the first end of the first strut and the first end of the second strut lower portion are locked by a first lock and the second end of the first strut and the second end of the second strut upper portion are locked by a second lock.

7. The expandable and collapsible scissor assembly as set forth in claim 6, wherein the first lock includes an upper hub and a lower hub pivotably connected to the

first end of the first strut and the first end of the second strut lower portion, respectively and the second lock includes a lower hub and an upper hub pivotably connected to the second end of the first strut and the second end of the second strut upper portion, respectively.

8. The expandable and collapsible scissor assembly as set forth in claim 7, wherein the upper hub and the lower hub for each of the first and second locks include mating members for securing the upper hub and the lower hub proximate each other.

9. The expandable and collapsible scissor assembly as set forth in claim 3, wherein the lock includes a lower hub and an upper hub pivotably connected to the second end of the first strut and the second end of the second strut upper portion, respectively.

10. The expandable and collapsible scissor assembly as set forth in claim 9, wherein the upper hub and the lower hub for each of the first and second locks include mating members for securing the upper hub and the lower hub proximate each other.

11. The expandable and collapsible scissor assembly as set forth in claim 9, comprising a leg having an upper end and a lower end, the first end of the first strut being pivotably connected to the upper end of the leg and the first end of the second strut lower portion being pivotably and slidably connected to the leg between the upper end and the lower end.

12. The expandable and collapsible scissor assembly as set forth in claim 11, comprising a leg lock for locking the first end of the second strut lower portion proximate the first end of the first strut.

13. The expandable and collapsible scissor assembly as set forth in claim 11, wherein the leg is telescopic, the upper end being disposed on a first portion of the leg and the lower end being disposed on a second portion of the leg at least partially receivable inside of the first portion of the leg.

14. The expandable and collapsible scissor assembly as set forth in claim 11, wherein, when the scissor assembly is in the expanded condition and the leg is vertical, the second end of the second strut upper portion is disposed vertically above the second end of the first strut.

15. The expandable and collapsible scissor assembly as set forth in claim 1, wherein, when the scissor assembly is in the expanded condition and the first end of the first strut is disposed vertically above the first end of the second strut lower portion, the second end of the second strut upper portion is disposed vertically above the second end of the first strut.

16. An expandable and collapsible structural module, comprising:  
a left and a right split scissor assembly, each split scissor assembly including a

first strut having a first end and a second end, a second strut upper portion having a first end and a second end, the first end of the second strut upper portion being pivotably connected to the first strut at an upper strut connection point, a second strut lower portion having a first end and a second end, the second end of the second strut lower portion being pivotably connected to the first strut at a lower strut connection point, wherein the lower strut connection point is between the upper strut connection point and the first end of the first strut; and

a front and a back scissor assembly, each scissor assembly including a first scissor strut and a second scissor strut, the front and back first scissor struts each having a first end connected to the second end of the left second strut upper portion and the first end of the left first strut, respectively, and a second end connected to the second end of the right first strut and the first end of the right second strut lower portion, respectively, and the front and back second scissor struts each having a first end connected to the second end of the left first strut and the first end of the left second strut lower portion, respectively, and a second end connected to the second end of the right second strut upper portion and the first end of the right first strut, respectively.

17. The expandable and collapsible structural module as set forth in claim 16, wherein, for both the left and a right split scissor assembly, the split scissor assembly is movable between a split scissor folded position in which the first end of the first strut and the second end of the second strut upper portion are substantially adjacent and the second end of the first strut and the first end of the second strut lower portion are substantially adjacent, and a split scissor expanded position.

18. The expandable and collapsible structural module as set forth in claim 17, wherein, for both the front and the back scissor assembly, the scissor assembly is movable between a scissor folded position in which the first end of the first scissor strut and the second end of the second scissor strut are substantially adjacent and the second end of the first scissor strut and the first end of the second scissor strut are substantially adjacent, and a scissor expanded position.

19. The expandable and collapsible structural module as set forth in claim 16, wherein, for both the front and the back scissor assembly, the scissor assembly is movable between a scissor folded position in which the first end of the first scissor strut and the second end of the second scissor strut are substantially adjacent and the second end of the first scissor strut and the first end of the second scissor strut are substantially adjacent, and a scissor expanded position.

20. The expandable and collapsible structural module as set forth in claim 16, wherein the first and second scissor struts are pivotably connected to each other.

21. An expandable and collapsible structure, comprising:  
a plurality of expandable and collapsible structural modules, each module comprising a left and a right split scissor assembly, each split scissor assembly including a first strut having a first end and a second end, a second strut upper portion having a first end and a second end, the first end of the second strut upper portion being pivotably

connected to the first strut at an upper strut connection point, a second strut lower portion having a first end and a second end, the second end of the second strut lower portion being pivotably connected to the first strut at a lower strut connection point, wherein the lower strut connection point is between the upper strut connection point and the first end of the first strut, a front and a back scissor assembly, each scissor assembly including a first scissor strut and a second scissor strut, the front and back first scissor struts each having a first end connected to the second end of the left second strut upper portion and the first end of the left first strut, respectively, and a second end connected to the second end of the right first strut and the first end of the right second strut lower portion, respectively, and the front and back second scissor struts each having a first end connected to the second end of the left first strut and the first end of the left second strut lower portion, respectively, and a second end connected to the second end of the right second strut upper portion and the first end of the right first strut,

wherein, for at least one pair of the modules, the modules are connected to one another in that a second end of a second strut upper portion and a second end of a first strut of a left split scissor assembly of one module is connected to a second strut upper portion and a second end of a first strut of a right split scissor assembly of another module.

22. The expandable and collapsible structure as set forth in claim 21, wherein, for at least one pair of the modules, a left split scissor assembly of one module is a right split scissor assembly of another module.

23. The expandable and collapsible structure as set forth in claim 22, wherein, for at least one pair of the modules, the modules are connected to one another in that a front scissor of one module is a front scissor of another module.

24. The expandable and collapsible structure as set forth in claim 21, wherein, for at least one pair of the modules, the modules are connected to one another in that a front scissor of one module is a front scissor of another module.

25. An expandable and collapsible structural module, comprising:

a left and a front split scissor assembly, each split scissor assembly including a first strut having a first end and a second end, a second strut upper portion having a first end and a second end, the first end of the second strut upper portion being pivotably connected to the first strut at an upper strut connection point, a second strut lower portion having a first end and a second end, the second end of the second strut lower portion being pivotably connected to the first strut at a lower strut connection point, wherein the lower strut connection point is between the upper strut connection point and the first end of the first strut; and

a right and a back scissor assembly, each scissor assembly including a first scissor strut and a second scissor strut, the right and back first scissor struts each having a first end connected to the second end of the left second strut upper portion and the first end of the left first strut, respectively, and a second end connected to the second end of the front first strut and the first end of the front second strut lower portion, respectively, and the right and back second scissor struts each having a first end connected to the second end



of the left first strut and the first end of the left second strut lower portion, respectively, and a second end connected to the second end of the front second strut upper portion and the first end of the front first strut.